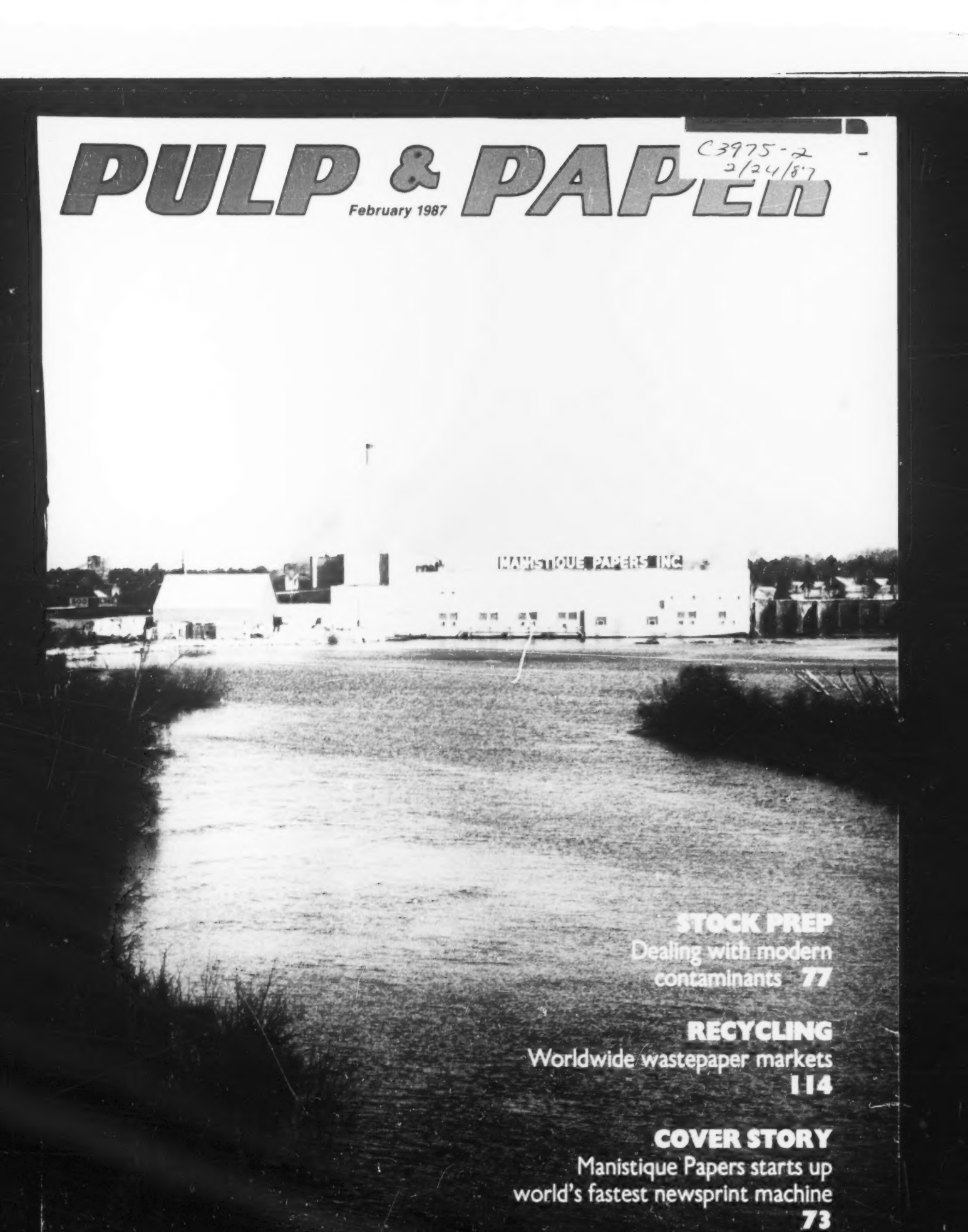
# PULP & PAPER

February 1987

C3975-2
2/24/87




**STOCK PREP**
Dealing with modern contaminants **77**

**RECYCLING**
Worldwide wastepaper markets **114**

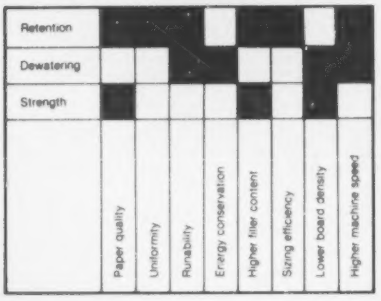
**COVER STORY**
Manistique Papers starts up world's fastest newsprint machine **73**

Volume 61
Number 2

# FEBRUARY

## FOCUS: STOCK PREP

**Wet end chemical systems** 48
Acceptance of multicomponent wet end chemical systems is growing, with production gains reported as high as 20% and new grades being produced




**New stock prep challenges** 77
Changes in woodhandling practices and widespread use of elastomers have placed tough new demands on screening and cleaning systems

**Extended rosin size** 83
Trials in which extended size replaced dispersed or paste rosin sizes show reduced pitch problems, improved sizing efficiency for a variety of grades

**Pulp fractionation benefits** 104
Fractionation can be used to produce back liner stock from filler stock in multilayer paperboard mills, reducing furnish and stock processing costs

## FOCUS: RECYCLING

**Wet end chemical treatment** 52
Treatment program can control pitch and other problems in furnishes using recycled coated stock, improving sheet quality and machine runability

**U.S. wastepaper outlook** 114
U.S. wastepaper consumption and export shipments are expected to continue to rise in the coming years; Far East exports show fastest growth

### THE COVER

***With its newly rebuilt machine, Manistique Papers has the potential to become the world's fastest newsprint producer. See story beginning on p. 73.*** **(Staff photo by Kenneth E. Smith.)**

## OTHER FEATURES

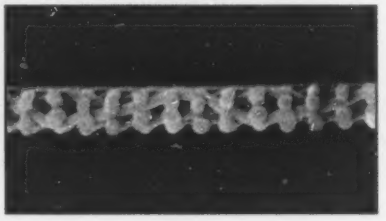
### FINISHING

**Compact folio sheeters** 58
Single-point delivery units provide fast grade and size changes and are ideal for smaller finishing rooms; can boost productivity significantly

### PAPERMAKING

**New liquid rosin size** 62
Shear insensitivity, storage stability, and wet end cleanliness are reported benefits of new solubilized rosin size; sizing costs are also often reduced

**Triple-layer fabrics** 123



Latest forming fabric designs increase fiber support and boost machine performance without compromising wear resistance and stability

### EXPANSION/MODERNIZATION

**Manistique machine rebuilt** 73
A unique five-nip press section and other new equipment gives newsprint machine the potential to be world's fastest at 4,500 fpm

### ENGINEERING

**Direct steam injectors** 86
Great Northern's Millinocket, Maine, mill uses direct steam injection of 40-psi steam to heat groundwood stock and coating mixtures efficiently

### MANAGEMENT

**Papermaker of the year** 95
Jefferson Smurfit's CEO, Michael W.J. Smurfit, more than doubled the size of his company in 1986 through shrewd acquisitions totaling over $1.4 billion

PULP & PAPER

EDITORIAL STAFF

Editor Ken L. Patrick AT
Executive Editor Kenneth E. Smith AT
Executive News Editor Willard E. Miles SF
Senior Editor John G.W. Evans NY
Senior News Editor Debra A. Garcia SF
Technical Editor Michael J. Ducey SF
News Editor Carl P. Enje SF
News Editor Rob Galin SF
Correspondents Editor Peggy J. Tombaugh AT
Assistant News Editor Regina M. McGrath SF
Assistant News Editor Karen J. Swenson NY
Staff Editor Maude Conrad SF
Editorial Assistant Suzanne Wright AT
International Editors Peter Sutton BR
John Pearson BR
Hugh O'Brian BR

Managing Editor Paula J. Inns SF
Art Editor Cynthia L. Seagren SF
Copy/Production Editor Kimberly Johnson SF
Technical Artist Janet Duncan SF

Office locations:

AT — Atlanta, 2700 Cumberland Parkway N.W., Suite 530, Atlanta, Ga. 30339; (404) 432-3186
SF — San Francisco, 500 Howard St., San Francisco, Calif. 94105; (415) 397-1881; Telex 278273
NY — New York, 370 Lexington Ave., New York, N.Y. 10017; (212) 683-8294; Telex 220442
BR — Brussels: Chaussée de Charleroi 123a, Boîte 8, B-1060, Brussels, Belgium; Telex 846-24672

PUBLISHING HEADQUARTERS
San Francisco, California

Publishing Director Leigh M. Freeman
Group Publisher Leonard E. Haas
Director of Production Andrew A. Mickus
Director of Circulation Wini D. Ragus
Ad Production Coordinator Mary Marrkand
Marketing Coordinator Dana Baker
Clerical Assistant Margaret L. Brown

Sales and business offices are listed on Advertisers' Index page

MILLER FREEMAN publications

Chairman of the Board ..... David R. Stevens
President ..... Marshall W. Freeman
Vice President ..... Charles C. Banks
Vice President ..... Leigh M. Freeman
Vice President ..... Leonard E. Haas
Vice President ..... Barbara M. Hampson
Vice President ..... Thomas L. Kemp
Vice President ..... Wini D. Ragus
Secretary/Treasurer ..... Miller Freeman III
Assistant Treasurer ..... Douglas M. Denny

PULP & PAPER (ISSN 0033-4081) is published monthly except November when semimonthly by MILLER FREEMAN PUBLICATIONS, 500 Howard St., San Francisco, Calif. 94105. Second class postage paid at San Francisco and at additional mailing office.
POSTMASTER: Please send Form 3579 to PULP & PAPER, 500 Howard St., San Francisco, Calif. 94105.
© Copyright 1987 by Miller Freeman Publications Inc. All rights reserved.
ABP BPA

Subscriptions & Address Change: Sent without charge in the U.S.A. & Canada (upon written request) to individuals in pulp, paper, and board manufacturing firms and paper converting firms. To all others there is a subscription charge of $50.00 a year in the U.S. All subscriptions to other countries: $75.00 a year, except Europe and Mediterranean, $85.00 (air service included). Single copy, $5.00, except Buyers Guide, $10.00. Photocopies of articles and complete microform volumes available through University Microfilms International, 300 N. Zeeb Rd., Ann Arbor, Mich. 48106.
Requests, subscription orders, and address changes must show name and position or job of individual, name and location of mill, plant or office where employed, and exact business or product produced at this location.
Send subscription correspondence to: Circulation Department, PULP & PAPER, 500 Howard St., San Francisco, Calif. 94105.
For address change, include label from recent issue.

# FEBRUARY

## COLUMNS

**From the Editors** 7
*by Kenneth E. Smith*
Looking at the short term

**Chemical Report** 41
*by Michael Ducey*
Sulfite byproducts looking for new outlets

**Career Development** 131
*by Roberta Bhasin*
Feuds and what to do about them

**Comment** 188
*by Fred D. Iannazzi*
Let's not sell ourselves short

## DEPARTMENTS

**Conference Calendar** 43
**News of People** 133
**Product Showcase** 143
**New Products** 143
**Product Review** 161
**Literature** 163
**Bookshelf** 173
**Supplier News** 174
**Finishing/Converting** 175

## SERVICES

**Reader Service Index** 141
**Reader Service Review** 154
**Reader Service Card** 155
**Professional Service Directory** 176
**Classified Advertising** 179
**Advertisers Index** 186

## NEWS

**Month in Statistics** 9
U.S. paper and paperboard production data for November

**Market Report** 11
News prices firming, discounts are mixed; box producers push for 10% price increase; LWC list weakened by discounts

**Grade Profile** 13
Tissue: Consumer prices poised for an increase

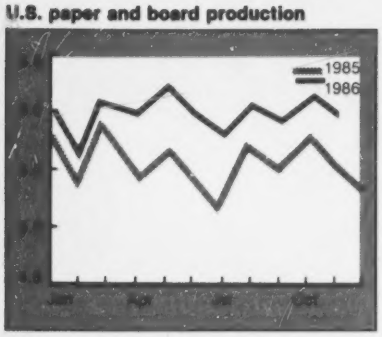
### NEWS SCAN

Mississippi Chemical okays mill 21
Con-Bath slates new machine 23

Eurocan launches upgrade 23
GN plans new recovery boiler 23
St. Marys okays SC machine 23
Saugbrugs pulls out of Matane 25
IP starts up "Razorback" 25
FAO has rosier picture 27
Capital spending to drop 8% 29
Southern mills reach contracts 31
Golden parachutes take off 31
P&T to buy Potlatch mill 31
Nocopi paper takes off 33
Sonoco to buy Boise packaging 33
O-I boxplants prosper 33
Videotex not at home 35
U.S. levies import fee 35
U.S., Canada settle dispute 35
EPA limits boiler emissions 37
C-E to buy AccuRay 37

**International News** 39
Pakistan mill secures financing
Jujo buys K-C's share of venture
Ahlström, Enso swing deal
Arauco gets big credit line
Sweden's production up

**U.S. paper and board production**




**U.S. production** of paper and paperboard totaled 5.9 million tons in November, up 6.5% from the same month in 1985, according to the American Paper Institute. The two-month trend rate reached 71.7 million tpy, and total production for the year now appears likely to reach a record 70.6 million tons—5.3% greater than last year and 3.1% above the previous record, set in 1984. Looking further ahead, current low inventory levels are an indicator of future production strength, the API said. Recent new declines in the dollar are also likely to keep production strong.

**Among major grades**, higher production for export sparked year-to-year increases of 6.9% for unbleached kraft board and 8.4% for solid bleached board. Printing and writing papers continued to lead the gains in the paper sector, with uncoated free-sheet shipments about 8.4% higher than last year. Tissue and newsprint both continued up about 3.0% from 1985, while packaging continued to lag last year's rate.

**Canadian newsprint shipments** in November rose 3.4% compared with the previous year, and operating rates jumped to 97%. Woodpulp shipments were up 9.5% over 1985, with operating rates steady at 91%. ■

| | Latest month (000 short tons) | | % change from year ago | Annualized year-to-date (000 short tons) | % change from year ago |
|---|---|---|---|---|---|
| **PAPER & PAPERBOARD PRODUCTION[1]** | | | | | |
| Newsprint | Nov. | 473 | 8.0 | 5,628 | 3.4 |
| Uncoated groundwood (s) | Nov. | 127 | −7.3 | 1,520 | −0.7 |
| Coated paper (s) | Nov. | 548 | 16.1 | 6,254 | 5.7 |
| Uncoated free sheet (s) | Nov. | 902 | 10.4 | 10,563 | 8.4 |
| Other printing/writing | Nov. | 112 | −1.8 | 1,394 | 3.8 |
| Total packaging and other paper (s) | Nov. | 417 | −1.0 | 5,141 | −1.8 |
| Tissue | Nov. | 420 | 0.2 | 5,094 | 3.0 |
| **Total paper** | **Nov.** | **2,998** | **6.4** | **35,592** | **4.2** |
| Unbleached kraft paperboard | Nov. | 1,457 | 7.6 | 17,633 | 6.9 |
| Semichemical medium | Nov. | 454 | 6.3 | 5,383 | 5.4 |
| Bleached paperboard | Nov. | 348 | 6.4 | 4,284 | 8.4 |
| Recycled paperboard | Nov. | 688 | 4.4 | 8,200 | 7.0 |
| **Total paperboard** | **Nov.** | **2,948** | **6.5** | **35,500** | **7.0** |
| **Total U.S. paper and paperboard output** | **Nov.** | **5,946** | **6.5** | **71,092** | **5.8** |
| **PULP, WASTEPAPER & FIBER[2]** | | | | | |
| Total U.S. woodpulp production | Oct. | 4,881 | 6.2 | 57,255 | 5.7 |
| Market pulp production | Oct. | 593 | 4.2 | 7,478 | 10.1 |
| Wastepaper consumption at paper/board mills | Oct. | 1,419 | 4.0 | 16,610 | 8.4 |
| Pulpwood consumption (cords) | Oct. | 7,779 | 1.5 | 91,150 | 5.9 |
| **CONVERTED PRODUCTS STATISTICS[3]** | | | | | |
| Corrugated box shipments (billion ft²) | Nov. | 21.046 | 3.3 | 260.536[6] | 5.5 |
| Containerboard inventories at U.S. box plants and mills | Nov. 1 | 2,175 | −12.7 | | |
| **INTERNATIONAL TRADE[4]** | | | | | |
| U.S. paper imports (including products) | Oct. | 998 | 1.1 | 11,557 | 3.5 |
| Imports of Canadian newsprint | Oct. | 686 | −0.9 | 8,304[6] | 2.0 |
| U.S. paper exports (including products) | Oct. | 366 | 9.6 | 4,675 | 16.2 |
| Exports of unbleached kraft linerboard | Oct. | 162 | 11.0 | 2,166 | 19.1 |
| Exports of woodpulp | Oct. | 344 | 27.9 | 4,484 | 19.2 |
| Norscan pulp inventories[4] | Nov. 30 | 1,035 | −33.4 | | |
| Norscan pulp operating rates[4] | Nov. | 97% | 96% | 90% | 97% |
| **CANADIAN STATISTICS[5] (reported in metric tons)** | | | | | |
| Total newsprint shipments | Nov. | 743 | −2.2 | 8,487[6] | 3.4 |
| Operating rates | Nov. | 97% | 93% | 94% | 92% |
| Inventories held by U.S. consumers | Nov. 30 | 1,263 | −12.8 | | |
| Other paper/board shipments | Nov. | 491 | 2.1 | 5,537 | 9.4 |
| Woodpulp shipments (export only) | Nov. | 541 | −10.3 | 6,984[6] | 9.5 |
| Operating rates | Nov. | 91% | 92% | 92% | 88% |

1. American Paper Institute. 2. API, Bureau of Census, American Pulpwood Assn. 3. Fibre Box Assn., Paperboard Packaging Council. 4. North American/Scandinavian paper-grade market pulp. 5. Canadian Pulp & Paper Assn. 6. Not annualized. (s) = Shipments.

# TISSUE: Consumer prices poised for an increase

**Grade structure:** Tissue falls into two major groups: sanitary and "other." About 98% of total ouput is sanitary, including bathroom, facial, toweling, napkins, basestock for sanitary stock, wadding, and wipes. The "other" group includes basestock for waxing, wrapping, and miscellaneous.

The two major markets for tissue are consumer and commercial and industrial (C&I). Consumer tissue is purchased by people at retail outlets, while industrial tissue is bought by hotels, offices, restaurants, and factories. Typical basis weights for tissue include 12 to 14 lb/3,000 ft² for single-ply bathroom tissue and 32 to 39 lb/3,000 ft² for single-ply towel.

Tissue demand in the U.S. is expected to decrease as population growth slows down. However, industry sources predict per capita tissue consumption will increase from 38.5 to 45.2 lb in the next decade.

The tissue industry has restructured as a result of James River Corp.'s purchase of Crown Zellerbach Corp. In the C&I tissue sector, Fort Howard Paper Co. ranks first with 31% of the 1.6-million-tpy market, followed by James River with 26%, and Scott Paper Co. with 9%.

**Production/capacity:** Tissue capacity in the U.S. has been steadily increasing since 1971 and in 1986 reached about 5.508 million tons. Little new consumer tissue capacity is expected to come onstream in 1987. Most of thenew capacity will be in the C&I segment of the tissue market, and C&I producers have already covered themselves by implementing a 5% price increase last fall.

In April, Fort Howard Paper Co. will start up the first of four recycled tissue machines at its $1-billion Savannah River mill in Rincon, Ga. No. 16 will have capacity for 250 tpd, most of which will end up in the C&I segment. In the fall, Georgia-Pacific Corp. plans to retire an old machine and start up a new one at its Palatka, Fla., mill, increasing capacity by about 100 tpd. This new production will be split between consumer and C&I areas. American Tissue Co. plans to convert Diamond International Corp.'s idle molded pulp mill into a recycled tissue mill late this year.

**Outlook:** There is some fear that by next year overcapacity may plague the industry. Late last year, James River announced it was going to bring on four tissue machines in the next eight years. Not all of that capacity will be new since some of the older machines will probably be retired. The first machine will be built at the Wauna Div. mill in Clatskanie, Ore., formerly owned by Crown Zellerbach. The 70,000-tpy machine is slated to start up in 1988 and will probably cost about $88 million, including converting lines.

Analysts estimate that Fort Howard is adding about 665,000 tons of capacity during the 1983-93 period, or about two thirds of the total tissue market's anticipated growth.

The operating rate has been flat: 92.4% in 1985 and, based on the first nine months, about 92.2% in 1986. Plus, U.S. tissue capacity is expected to grow 3.0% this year, 2.6% in 1987, 2.5% in 1988, and 2.0% in 1989, according to the American Paper Institute's recent capacity survey.

This works out to an average annual growth rate of 2.4% for 1987-89, representing an additional 402,000 short tons of capacity. However, these figures reportedly do not include the four machines James River is planning.

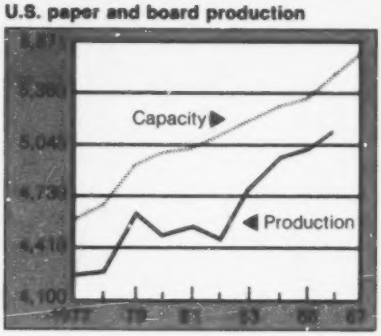
The API has understated capacity in recent surveys and has revised capacity growth upward by 1.1% in 1986, 1.9% in 1987, and 3.1% in 1988.

With pulp and wastepaper prices still on the rise, consumer tissue producers should be successful in pushing through a price increase this year, particularly since most of the new capacity coming onstream in 1987 is in the C&I sector. As for C&I producers, the 5% price hike they instituted in the third quarter of 1986 has been well accepted.

**Prices:** Price trends tracked by the Bureau of Labor Statistics' producer price index for sanitary papers and health products are as follows (year-end, 1967 = 100): 1974, 181.1; 1975, 201.7; 1976, 223.5; 1977, 240.7; 1978, 264.3; 1979, 291.0; 1980, 338.8; 1981, 348.4; 1982, 361.0; 1983, 359.7; 1984, 371.4; 1985, 380.6; 1986 (third quarter), 383.6.

## SUPPLY/DEMAND (000 tons)

**U.S. paper and board production**




## FORECAST (000 tons)

| | 1985 | 1986e | 1987e |
|---|---|---|---|
| Production | 4,941 | 5,078 | 5,198 |
| Capacity[1] | 5,345 | 5,508 | 5,651 |
| Utilization rate | 91.8% | 92.2% | 92.0% |
| Imports[2] | 56 | 65 | 75 |
| Exports[2] | 18 | 16 | 13 |
| Apparent U.S. consumption | 4,979 | 5,127 | 5,260 |
| lb/capita | 42.0 | 43.2 | 44.3 |
| GNP ratio[3] | 2.77 | 2.79 | 2.79 |

e = Estimate.
1. American Paper Institute data.
2. U.S. Dept. of Commerce data.
3. 000 tons/$ billion real GNP (1982)

## TOP U.S. PRODUCERS (000 tpy)

| | Annual capacity | Market share (%) |
|---|---|---|
| **1.** Scott Paper | 1,035 | 18.3 |
| **2.** James River | 1,010 | 17.9 |
| **3.** Procter & Gamble | 900 | 15.9 |
| **4.** Fort Howard | 850 | 15.0 |
| **5.** Georgia-Pacific | 540 | 9.6 |
| **6.** Kimberly-Clark | 433 | 7.7 |
| **7.** Erving-Paper Mills | 150 | 2.7 |
| **8.** Pope & Talbot | 148[1] | 2.6 |
| **9.** Chesapeake | 110 | 1.9 |
| **10.** APL | 95 | 1.7 |

Market share of top five companies: **78.7%**

Market share of top ten companies: **93.3%**

Total U.S. capacity (1986): **5.651 million short tons**

1. Includes purchase of Potlatch Corp.'s 49,200-tpy tissue and towel mill in Ransom, Pa.

of sodium sulfite, possibly 1% to 5%, and caustic, perhaps about 1%. It also may involve a reduced proportion of chemical fibers to mechanical fibers.

Possibilities along those lines were suggested by Thomas McDonough, group leader of pulping and bleaching at the Institute of Paper Chemistry. McDonough said that one way to improve smoothness and pick resistance is through improved bonding of pulp fibers after grinding through oxidated treatments such as chlorine dioxide, followed by strongly alkaline hydrogen peroxide. Strongly alkaline treatments in general will improve fiber bonding, McDonough said.

Another possible process would involve recycling of spent bleaching liquor from the peroxide bleaching stage back to the grinders to be used or mixed with grinder shower water so that the grinding is done in an alkaline environment, he suggested.

The latter technology has been developed by the Swedish firm MoDo-Chemetics. It is similar to alkaline post-treatment of finished pulp, with the added feature of softening the lignin at the time of fiber separation to mitigate much of the fiber damage that usually occurs during mechanical pulping. "If you treat the pulp with alkali after it's made, then softening of the lignin has the beneficial effect of making the fibers more flexible and more conformable to one another," McDonough explained. Adding sodium sulfite softens lignin in a similar manner.

Several southern mills that use coarse pine fiber to make lighter-weight coated publication papers are considering such processes. Weyerhaeuser Co. reportedly has been doing experiments at Columbus, Miss., since 1982.

**Rebalancing mill system.** With the startup of the new Pine Bluff machine specializing in medium-weight paper, IP is adjusting the grade mix on five other coated publication paper machines at two northern mills. At the Androscoggin mill in Jay, Maine, IP will focus Nos. 2 and 3 machines on lightweight coated papers (32 and 34 lb). Some medium weights, however, will still be made for some customers in the Northeast, where freight rates and delivery times are favorable. And the Hudson River mill in Corinth, N.Y., will specialize more in the heavier weight (50 to 80 lb) and higher brightness papers (78 to 80 GE) sold for nonmagazine uses. ■

*FORECAST*

## FAO sees better scenario for world capacity

Worldwide capacity for paper-grade woodpulp is expected to grow by 2.0% annually from 1985 to 1990, reaching 167.7 million metric tons. Total paper and board capacity is expected to grow 1.9% during the period to 241.7 million tons, according to the latest survey by the United Nations' Food & Agriculture Organization. Estimated pulp capacity for 1990 will be almost double the amount forecast in the FAO's previous *Pulp and Paper Capacities* survey.

In 1985, capacity for paper-grade woodpulp was estimated at 151.2 million tons, an average annual rise of 1.7% from 1980 levels. Capacity is expected to increase by 16.5 million tons by 1990 to 167.7 million tons—a 2.0% annual increase. Capacity for paper and board in 1985 was 220.4 million tons, a rise of 7.9 million tons from 1984. By 1990 this is expected to increase by 21.3 million tons to 241.7 million tons, a rise of about 1.9% compared with a 2.2% increase during 1980-85.

The fastest growth in paper and

**FAO forecasts for world paper and pulp capacity.**

**World woodpulp capacity, 1985-90**

| | Capacity (000 metric tons) 1985 | 1990 | Annual average increase 1980-85 | 1985-90 |
|---|---|---|---|---|
| **World total** | 151,157 | 167,705 | 1.7% | 2.0% |
| **Developed economies** | 123,220 | 130,408 | 1.4 | 1.1 |
| North America | 75,255 | 78,319 | 1.9 | 0.8 |
| Japan | 12,014 | 12,451 | −0.9 | 0.7 |
| Western Europe | 31,820 | 35,344 | 0.6 | 2.1 |
| Oceania | 2,681 | 2,844 | 3.8 | 1.2 |
| Others | 1,450 | 1,450 | 14.0 | — |
| **Developing economies** | 9,271 | 12,605 | 5.3 | 6.3 |
| Africa | 717 | 1,007 | 13.2 | 7.0 |
| Latin America | 6,427 | 9,058 | 3.9 | 7.1 |
| Asia | 2,127 | 2,540 | 8.0 | 3.6 |
| **Centrally planned economies** | 18,666 | 19,692 | 1.9 | 1.1 |
| Asia | 2,215 | 3,166 | −3.7 | 7.4 |
| Eastern Europe | 4,401 | 4,476 | 3.0 | 0.3 |
| U.S.S.R. | 12,050 | 12,050 | 2.8 | — |

**World paper and paperboard capacity, 1985-90**

| | Capacity (000 metric tons) 1985 | 1990 | Annual average increase 1980-85 | 1985-90 |
|---|---|---|---|---|
| **World total** | 220,394 | 241,662 | 2.2% | 1.9% |
| **Developed economies** | 169,521 | 183,600 | 2.0 | 1.6 |
| North America | 84,240 | 89,989 | 1.8 | 1.3 |
| Japan | 24,043 | 25,365 | 2.2 | 1.1 |
| Western Europe | 56,510 | 63,014 | 1.9 | 2.2 |
| Oceania | 2,858 | 3,200 | 3.8 | 2.3 |
| Others | 1,870 | 2,032 | 7.1 | 1.7 |
| **Developing economies** | 21,519 | 24,456 | 5.5 | 2.6 |
| Africa | 832 | 1,174 | 2.2 | 7.1 |
| Latin America | 12,234 | 13,686 | 5.7 | 2.3 |
| Asia | 8,453 | 9,596 | 5.6 | 2.6 |
| **Centrally planned economies** | 29,354 | 33,606 | 1.5 | 2.7 |
| Asia | 8,792 | 12,534 | −0.9 | 7.3 |
| Eastern Europe | 6,562 | 7,072 | 1.5 | 1.5 |
| U.S.S.R. | 14,000 | 14,000 | 3.1 | — |

Source: FAO Pulp & Paper Capacities 1980-1990.

paperboard capacity over the next five years is expected to occur in the centrally planned economies of Asia, eastern Europe, and the U.S.S.R., which will grow at 2.7% annually compared with 1.5% during 1980-85, according to the FAO. The developing market economies will be a close second, growing at a 2.6% average annual rate through 1990—almost a 50% slowdown compared with 1980-85.

The developed countries will still account for about 76% of total paper and paperboard capacity in 1990. Developing countries will increase their share to about 10.1% by 1990—up only about 0.4% from 1985 levels and 1.8% from 1980. Centrally planned economies will account for 13.9% of paper and board production in 1990, compared with 13.3% in 1985 and 13.8% in 1980.

**Paper grades.** The FAO reports that increases in capacity for the main paper grades for 1985 were slightly higher than had been predicted in 1984. Newsprint capacity increased by 0.5 million tons to 31.7 million tons in 1985 and is expected to increase to 33.9 million tons by 1990. Annual capacity growth for newsprint during 1985-90 is estimated at 1.3% compared with 2.3% during 1980-85. By 1990, developed nations will account for about 83% of newsprint capacity, but newsprint capacity growth in these countries will increase by only 1.1% during the period. Developing countries will experience a 3.1% annual rise in newsprint capacity through 1990, down from the 9.5% rate for 1980-85.

Capacity growth for printing/writing grades is still going strong. In 1985, the world had capacity for 57.3 million tons of these grades, and this is expected to grow by 3.0% to 66.6 million tons by 1990, according to the FAO. Growth from 1985 to 1990 will be 1.0% lower than from 1980 to 1985. 1985's capacity increase of 2.5-million-ton over 1984 outperformed the FAO's earlier predictions, largely because People's Rep. China increased capacity by 0.6 million tons more than predicted.

In 1985, world capacity for other paper and board grades was 131.2 million tons, an increase of 4.8 million tons over 1984, the FAO reports. Growth through 1990 is predicted to be 9.7 million tons, amounting to 141 million tons by 1990.

**Pulp grades.** Worldwide market pulp capacity in 1985 was about 31 million tons. This is expected to rise by 3% to 32 million tons by 1988. The FAO breakdown (in million metric tons): North America, 13.4; Scandinavia, 6.2; rest of Europe, 3.2; U.S.S.R., 2.0; Latin America, 2.3; Oceania, 1.0; and developing Africa, 0.5.

Chemical paper-grade woodpulp capacity was about 104.4 million tons in 1985, and this is expected to increase by 7.1 million tons by 1990. The FAO reports that chemical pulp accounted for 63% of total paper-grade pulp in 1985. Developing countries will watch their woodpulp capacity increase by 7.4% during 1985-90, while developed economies will experience a slight 0.8% increase.

Mechanical pulp capacity in 1985 fell 0.4 million tons from 1984, attributed mostly to reductions in developed markets. By 1990, output is to drop by 0.1 million tons to 25.2 million tons. Most of the output is from coniferous raw material.

Thermomechanical pulp is picking up the slack. Capacity grew by 0.7 million tons from 1984 to 1985, with 4.2 million more estimated to come onstream by 1990, bringing the total to 15.5 million tons. In 1985, about 96% of TMP was produced in developed countries (53% in North America). The FAO survey shows that over half the expected capacity growth will occur in western Europe (2.3 million tons). Most of the rest will take place in North America (1.5 million tons).

About 90% of nonwoodpulp is produced in developing countries, accounting for about half of their paper pulp capacity in 1985. Capacity of other-fiber pulp is expected to grow by 3.5 million tons to 16.7 million tons by 1990. People's Rep. China accounts for half of world capacity. India contributes 15%.

The ratio of total world pulp to paper capacity for 1985-90 is expected to stabilize between 74% and 74.5%. ■

*CAPITAL SPENDING*

## U.S. paper industry spending to drop 8% this year

U.S. pulp and paper companies will spend 7.8% less on new plant and equipment in 1987 than in 1986, according to a new survey conducted by the Commerce Dept.'s Bureau of Economic Analysis. The government report, based on figures gathered during October and November of last year, forecasts total spending of $8.17 billion in 1987, down from $8.89 billion in 1986.

The decline would be the first since 1983, and it would be the largest drop in capital outlays since the recession year of 1982, during which spending fell 11.2%. Paper industry expenditures have set new records each year since 1984.

The 1986 total of $8.89 billion is up 3.5% from 1985. The new estimate for 1986 spending is also up slightly from Commerce's July/August estimate of $8.59 billion. The pace of spending was greatest in the fourth quarter, as usual. The annualized spending rate rose from $8.61 billion in the first quarter of 1986 to $9.02 billion in the second. Spending dropped to a rate of $8.68 billion in the third quarter before jumping to $9.19 billion in the final period.

**Revival ahead?** The Commerce report echoes two other recent surveys in the direction spending will take in 1987, but the government forecast calls for a much less severe drop. McGraw-Hill Economics forecasts a 24% decline in spending for 1987, while a new *Pulp & Paper Project Report* survey shows a drop-off of 19% in spending for the 1986-88 period compared with 1985-87.

One reason for this year's decline in spending is that the U.S. paper industry went through a major round of capacity expansion in 1986. Nine paper machines—almost all on printing/writing grades—started up last year in the U.S., but only two large machines (Fort Howard Paper Co. and Georgia-Pacific Corp.—both are tissue units) are scheduled to go online this year.

Because it does show less decline than the earlier surveys, the Commerce report may signal a change of heart among U.S. paper companies. Market conditions have been improving, and most analysts expect a sizable jump in both U.S. and Canadian paper industry profits. Rising prices for most grades are improving potential return on investment for major capacity expansions. And rising operating rates—particularly in such tight grade segments as newsprint and linerboard—may push companies to expand in order to meet future customer requirements.

On the tax front, the final bill was not as onerous for industry as earlier versions, and planners no longer have

# U.S. WASTEPAPER CONSUMPTION AND EXPORT SHIPMENTS CONTINUE TO RISE

## Far East exports show fastest growth as European market faces glut; flow control ordinances, contaminants make future supply uncertain

**By DEBRA ADAMS GARCIA, Senior News Editor**

Paperstock supplies from the U.S. in 1986 continued to meet the rise in demand of paper mills around the world as well as domestically. Consumption in the coming years is expected to continue to grow, but available supply may shrink. At the same time, the focus of U.S. export opportunities will shift to Asia from Europe.

European demand for imported wastepaper has declined over the past several years, and Europe has become almost self-sufficient. In fact, recyclable paper collections in Europe last year were so high that prices, at least for the lower grades, fell dramatically.

In Asia, however, orders for paperstock remained robust through the first three quarters and much of the fourth quarter. Prices, too, held up. Japan has been able to supply much of its own requirements for wastepaper. Rep. Korea and Taiwan, though, have become major U.S. customers and, People's Rep. China and India have increased their consumption in recent years.

World consumption of wastepaper reached 63.4 million short tons in 1985, a gain of nearly 2.2% over 1984. Much of these additional tons were used in Asia. Europe's usage rose 2.8% to 22.9 million tons. Consumption in Latin America, Africa and Australasia was about flat. North American demand, however, fell 4% to nearly 18 million tons.

For U.S. paperstock dealers, overseas shipments are important. Usually, when domestic demand is slack, overseas demand manages to compensate. In 1985, 3 million out of the world's 7.8 million tons exported came from the U.S. Europe's exports also topped the 3-million-ton mark; however, 2.5 million tons of this was traded by European Economic Community (EEC) countries, mainly within common boundaries.

**U.S. EXPORTS UP.** Total U.S. paperstock exports in 1985 exceeded the previous year's level by just 0.5% to 3.284 million tons. The three largest customers—accounting for 57.5% of the total—were Taiwan (757,024 tons); Rep. Korea (675,732 tons), and Mexico (456,543 tons).

Exports were one reason why U.S. paperstock prices escalated steadily and significantly during 1986 (Table 1). In December, No. 1 news prices had increased by 50% or more from a year earlier. Old corrugated container OCC prices doubled. Hard white shavings levels rose by as much as 85%. Computer printout prices, though, were up by less than 20%.

Continued strong demand from Asian countries, a rise in demand from Europe and other areas, plus a modest improvement in U.S. consumption is expected to keep prices relatively stable through at least the early part of 1987, market observers indicated.

In the U.S. in 1986, about 22 million tons of wastepaper were expected to be collected for recycling, according to the American Paper Institute. Of this total, 18.3 million tons were used as raw material in U.S. mills, and 3.7 million tons were exported.

Currently, wastepaper accounts for 25% of the fibrous material used by the paper industry in the U.S. By 2000, API forecasts that total collections will exceed 30 million tons. However, supply may not keep pace with the rapid expansions in secondary fiber usage worldwide.

Canada expects to continue to increase its consumption of wastepaper at paper and board mills in the coming years, and this will mean a bigger reliance on U.S. supplies, according to the Canadian Pulp & Paper Assn.

CPPA statistics show Canadian mills used 1.8 million tons of secondary fiber furnish during the first five months of 1986, about 12% more than a year ago. Of this total, about 550,000 tons were imported from the U.S.

OCC accounts for about 50% of this total, and pulp substitutes make up 22% of the amount. Canadian paperstock prices increased significantly throughout the year, except for newspaper grades.

According to CPPA, the oversupply situation that characterized the Canadian market for so many years has now been corrected. Assisted by offshore competition for available supply of wastepaper, the market is now in balance. This trend is expected to continue through 1987.

**EUROPEAN MARKET GLUTTED.** However the market has not been as good in Europe. Although paper and

*TABLE 1:* **U.S. wastepaper exports (short tons).**

| Grade | Jan.-Oct. 1986 | Jan.-Oct. 1985 | % change 1986 vs 1985 | Jan.-Oct. 1981 | % change 1986 vs 1981 |
|---|---|---|---|---|---|
| News | 635,909 | 499,096 | 27.4 | 361,569 | 75.9 |
| Deinking | 357,696 | 237,165 | 50.8 | 105,379 | 239.4 |
| Pulp subs | 267,014 | 143,360 | 86.3 | 166,588 | 60.3 |
| Corrugated | 1,268,156 | 1,095,181 | 15.8 | 853,770 | 48.5 |
| All other | 558,446 | 763,913 | -26.9 | 402,797 | 38.6 |
| **Total** | **3,087,221** | **2,738,715** | **12.7** | **1,890,103** | **63.3** |

Source: National Assn. of Recycling Industries from Dept. of Commerce.

board mills in Europe operated fairly well in 1986—enabling them to raise prices in such key grades as pulp, linerboard and newsprint—excess collections of recyclable paper caused a glut that weakened the market for paperstock.

Wastepaper prices in France and Fed. Rep. Germany plunged in the third quarter from second-quarter levels. Part of the problem with the French market was thought to be loss of business with Italy due to the increase in Italian imports of U.S. paperstock. West German exports into north and east France also weakened prices. But, in the U.K., the market stabilized except for some distressed-priced lower grades.

In Italy and Switzerland, high grade prices were affected in the fourth quarter by uncertainty over pulp prices. The situation was not expected to change through year-end, and paperstock that was collected but not sold to paper and board mills ended up in the refuse pile.

Bureau International de la Récupération Paperstock Div. president David Stansfield reported at mid-year that European paper mills had never before experienced such an available reserve of paperstock. Compared with early-1985 prices, mid year prices had fallen by 60% to 80%, reaching record lows, said Stansfield. The higher grades were not as depressed, and collections of the lower grades were being curtailed in an effort to stop further erosion.

In the U.S., however, 1986 was a good year for paperstock recyclers. Wastepaper use by the nation's paper and board mills was up about 8.6% through October from a year earlier, according to API.

At this rate, an estimated 17 million tons of wastepaper will have been consumed by U.S. mills by year-end, estimates the National Assn. of Recycling Industries. At the same time, export shipments were expected to be up about 11% to more than 3.7 million tons.

**FUTURE SUPPLIES QUESTIONED.** U.S. industry observers, though, look with caution to the years ahead. Flow-control ordinances in the U.S. threaten to disrupt supply lines as more waste-to-energy plants are built. More than 233 of these plants will be in place by the year 2000, according to API. Recycling in the U.S. now removes an estimated 15% of the paper headed for the solid waste stream.

"The implications are ominous, particularly since many of these new facilities are planned in regions of the greatest wastepaper consumption," notes Fred D. Iannazzi, president of Andover International Associates.

The recovery of OCC in the U.S. grew from about 6.2 milion tons in 1976 to 8.4 million tons through 1983, an increase of 4.6%/year, noted Iannazzi. This growth rate was more than double that of U.S. consumption of containerboard, the source of OCC supply.

The result was an increase in the OCC recovery rate from 37% to 44%. Most of the increased OCC usage oc-

*FIGURE 1:* **U.S. wastepaper prices for 1986.***

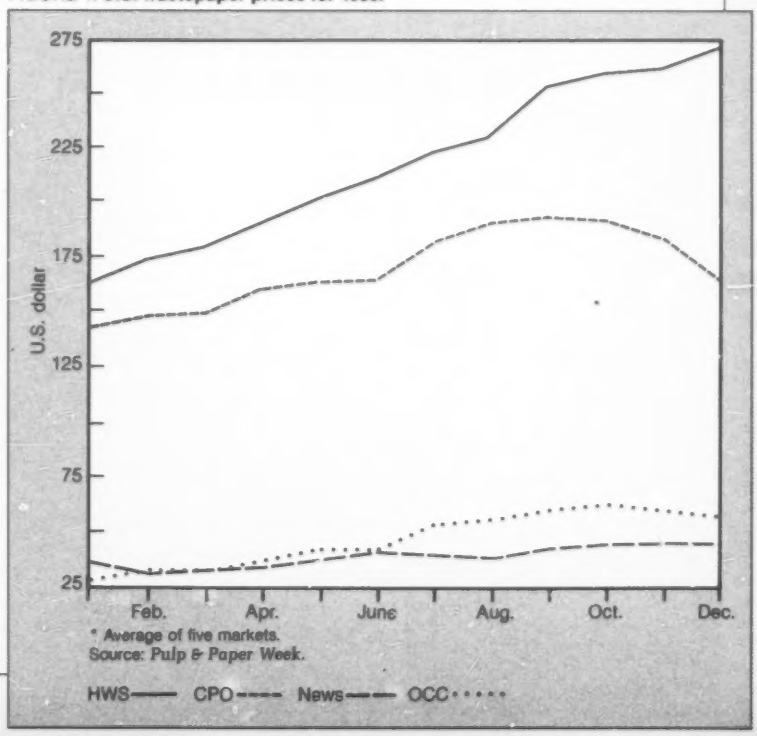


*TABLE 2:* **Wastepaper recovery, consumption and trade in 1984-85 for selected countries.[1]**

| Country | Recovery | | Consumption | | Imports | | Exports | | Utilization rate (%)[2] | | Recovery rate (%)[3] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1984 | 1985 | 1984 | 1985 | 1984 | 1985 | 1984 | 1985 | 1984 | 1985 | 1984 | 1985 |
| Belgium | 526 | 530 | 219 | 225 | 67 | 85 | 373 | 390 | 26 | 27 | 32 | 33 |
| Denmark | 275 | 275e | 240 | 223 | 37 | 32 | 72 | 100 | 68 | 69 | 29 | 30 |
| France | 1,922 | 1,936 | 2,200 | 2,221 | 399 | 373 | 500 | 476 | 40 | 42 | 35 | 34 |
| Germany, West | 4,120 | 4,371 | 3,986 | 3,991 | 610 | 565 | 767 | 911 | 44 | 43 | 38 | 41 |
| Greece | 80 | 130 | 100 | 150 | 15 | 12 | 0 | 0 | 33 | 46 | 17 | 25 |
| Italy | 1,393 | 1,313 | 2,038 | 2,014 | 646 | 702 | 1 | 1 | 44 | 44 | 26 | 25 |
| Netherlands | 1,133 | 1,148 | 1,107 | 1,158 | 451 | 463 | 491 | 443 | 59 | 61 | 46 | 46 |
| United Kingdom | 2,174 | 2,171 | 2,003 | 2,067 | 85 | 92 | 256 | 196 | 55 | 55 | 28 | 28 |
| **EEC** | **11,523** | **11,874** | **11,893** | **12,049** | **2,310** | **2,324** | **2,460** | **2,517** | **45** | **46** | **32** | **33** |
| Finland | 301 | 342 | 281 | 283 | 34 | 23 | 65 | 85 | 4 | 4 | 21 | 25 |
| Norway | 118 | 131 | 112 | 120 | 32 | 32 | 40 | 42 | 7 | 7 | 20 | 23 |
| Sweden | 719 | 763 | 731 | 756 | 125 | 180 | 149 | 130 | 11 | 11 | 38 | 39 |
| **Nordic** | **1,138** | **1,236** | **1,124** | **1,159** | **191** | **235** | **254** | **257** | **7** | **7** | **29** | **32** |
| Austria | 368 | 377 | 701 | 814 | 402 | 491 | 70 | 53 | 36 | 38 | 39 | 38 |
| Portugal[4] | 220 | 227 | 220 | 230 | 5 | 7 | 5 | 4 | 34 | 36 | 43 | 44 |
| Spain[4] | 1,225 | 1,291 | 1,579 | 1,669 | 370 | 395 | 16 | 17 | 54 | 57 | 41 | 44 |
| Switzerland | 494 | 503 | 431 | 449 | 102 | 107 | 165 | 161 | 44 | 44 | 44 | 43 |
| **Other W. Europe** | **2,307** | **2,398** | **2,931** | **3,162** | **879** | **1,000** | **256** | **235** | **45** | **47** | **41** | **43** |
| Bulgaria | 50e | 50e | 50e | 50e | 0 | 0 | 0 | 0 | 13e | 13e | 10e | 10e |
| Czechoslovakia | 563 | 537 | 390 | 396 | 0 | 0 | 146 | 141 | 31 | 31 | 45 | 42 |
| Germany, East | 637 | 647 | 643 | 664 | 9 | 22 | 13 | 10 | 50 | 51 | 47 | 47 |
| Hungary | 288 | 282 | 288 | 292 | 0 | 10 | 0 | 0 | 57 | 59 | 43 | 42 |
| Poland | 478 | 456 | 418 | 425 | 0 | 0 | 68 | 31 | 34 | 34 | 38 | 34 |
| Romania | 275e | 275e | 260e | 260e | 0 | 0 | 0 | 0 | 32e | 32e | 40e | 40e |
| USSR | 1,900e | 1,900e | 1,700e | 1,800e | 0 | 0 | 200e | 200e | 17e | 18e | 21e | 21e |
| Yugoslavia | 425 | 430 | 560 | 567 | 135 | 137 | 0 | 0 | 42 | 42 | 36 | 36 |
| **E. Europe** | **4,589** | **4,577** | **4,309** | **4,454** | **144** | **169** | **427** | **382** | **26** | **26** | **28** | **28** |
| **Total Europe** | **19,657** | **20,085** | **20,257** | **20,824** | **3,524** | **3,728** | **3,397** | **3,391** | **31** | **32** | **32** | **32** |
| Canada | 997 | 1,000e | 1,463 | 1,442 | 605 | 520 | 161 | 190 | 10 | 10 | 20 | 20 |
| USA | 18,424 | 17,868 | 15,172 | 14,535 | 100 | 79 | 2,934 | 2,981 | 24 | 23 | 27 | 26 |
| **North America** | **19,421** | **18,868** | **16,635** | **15,977** | **705** | **599** | **3,095** | **3,171** | **22** | **21** | **26** | **26** |
| China | 1,442 | 1,724 | 1,350e | 1,650e | 0 | 0 | 0 | 0 | 18e | 18e | 18 | 18 |
| Hong Kong | 450e | 450e | 35e | 40e | 0 | 0 | 415e | 410e | 100e | 100e | 57e | 54e |
| India | 450e | 500e | 650 | 700 | 250 | 200 | 0 | 0 | 48 | 44 | 29e | 29e |
| Indonesia | 100e | 100e | 125e | 125e | 40e | 40e | 0 | 0 | 33e | 26e | 16e | 14e |
| Japan | 9,635 | 10,152 | 9,700 | 10,442 | 312 | 300 | 8 | 18 | 50 | 51 | 50 | 52 |
| Korea, Rep. | 729 | 817 | 1,410 | 1,518 | 681 | 701 | 0 | 0 | 64 | 66 | 33 | 36 |
| Malaysia | 80e | 80e | 20e | 20e | 0 | 0 | 50e | 50e | 28e | 27e | 21e | 20e |
| Philippines | 45 | 45e | 102 | 97 | 61 | 58 | 0 | 0 | 40 | 44 | 11 | 12 |
| Taiwan | 900 | 901 | 1,840 | 1,860 | 945 | 959 | 0 | 0 | 95 | 92 | 47 | 44 |
| Thailand | 130e | 130e | 250e | 250e | 120e | 120e | 0 | 0 | 76e | 71e | 25e | 25e |
| Turkey | 150e | 150e | 150e | 150e | 2e | 2e | 0 | 0 | 31 | 22e | 29e | 21e |
| **Asia** | **14,111** | **15,049** | **15,632** | **16,852** | **2,411** | **2,380** | **473** | **478** | **45** | **44** | **37** | **36** |
| Australia | 494 | 557 | 476 | 523 | 5 | 1 | 23 | 35 | 31 | 34 | 22 | 25 |
| New Zealand | 104 | 111 | 96 | 98 | 0 | 0 | 8 | 13 | 14 | 13 | 24 | 19 |
| **Australasia** | **598** | **668** | **572** | **621** | **5** | **1** | **31** | **48** | **25** | **27** | **25** | **23** |
| Argentina | 350e | 280e | 342 | 270 | 0 | 0 | 0 | 0 | 36 | 32 | 36 | 32 |
| Brazil | 140e | 140e | 141e | 141 | 1e | 2 | 3e | 3 | 3e | 3e | 4e | 4e |
| Chile | 51e | 51e | 51e | 51e | 0 | 0 | 0 | 0 | 14e | 14e | 17e | 17e |
| Colombia | 157e | 157e | 163e | 163e | 6e | 6e | 0 | 0 | 45e | 45e | 35e | 35e |
| Mexico | 919 | 978 | 1,453 | 1,533 | 533 | 589 | 0 | 0 | 64 | 63 | 41 | 39 |
| Peru | 46e | 46e | 36e | 36e | 0 | 0 | 0 | 0 | 26 | 26 | 25 | 25 |
| Venezuela | 197 | 239 | 327 | 355 | 130 | 116 | 0 | 0 | 59 | 65 | 26 | 33 |
| **Latin America** | **1,860** | **1,891** | **2,513** | **2,549** | **670** | **713** | **3** | **3** | **29** | **28** | **19** | **20** |
| Algeria | 35e | 35e | 35e | 35e | 0 | 0 | 0 | 0 | 41 | 41 | 21 | 21 |
| Egypt | 31 | 31e | 144 | 144e | 110e | 110e | 0 | 0 | 97 | 97e | 7 | 7e |
| Kenya | 64 | 64e | 64 | 64e | 2 | 0 | 0 | 0 | 54 | 54e | 54 | 54e |
| Morocco | 53 | 48 | 72 | 68 | 19 | 22 | 0 | 0 | 64 | 63 | 28 | 27 |
| South Africa | 375e | 380e | 375e | 380e | 0 | 0 | 0 | 0 | 27 | 25 | 27 | 29 |
| **Africa** | **558** | **558** | **690** | **691** | **131** | **132** | **0** | **0** | **33** | **32** | **18** | **19** |
| **World total** | **56,205** | **57,119** | **56,299** | **57,514** | **7,446** | **7,553** | **6,999** | **7,091** | **30** | **30** | **30** | **30** |

1. Those selected here represent over 95% of the world's paper and board production and consumption. World totals are based on all countries, not just those selected here.
2. Wastepaper as a percentage of total paper and board production.
3. Wastepaper recovery as a proportion of total paper and board consumption.
4. Since Spain and Portugal did not join the EEC until Jan. 1986, their 1985 results are included under Other Western Europe.
Source: *PPI Annual Review 1986*. e = *PPI* estimate.

curred in the manufacture of kraft linerboard and semichemical medium, noted Iannazzi. Export sales also increased sharply during this period.

Andover International forecasts OCC demand for domestic and export sale will reach about 14 million tons by 1993, involving a recovery rate of about 58%. Iannazzi questioned if there will be adequate supplies to meet these requirements.

Other problems also face recyclers in the coming years. Various contaminants in recyclable paper are causing difficulties in sorting and, ultimately, in customer satisfaction. Hotmelt glues have been a source of frustration for recyclers of corrugated containers in the past. More recently, however, laser printing on computer printing papers has become of greater concern. So far, no technology has been able to disperse laser printing before it ends up in deinking systems, although the Japanese are said to be close to a discovery. Apparently, they are using a chemical which dissolves the laser content; however, it is reportedly costly.

**NEW EQUIPMENT DEVELOPED.** Suppliers, however, continue to forge ahead to develop new equipment to meet the needs of an expanding number of secondary fiber consuming mills. Escher Wyss has introduced a new system for cleaning circuit water in wastepaper pulping operations. Called the Purgomat, the unit is used to clean backwater such as wash filtrate or whitewater II in the 5 to 9 pH range .

The capacity of the system is 1,800 to 30,000 $m^3$/min. Chemicals are added to the water system to floc unwanted solids. After aeration, the flocced solids are separated as sludges. The clarified water is then pumped off and recycled.

Escher Wyss indicates that chemical costs are low because the unit is computer controlled. Water quality is also kept constant despite load fluctuations by the control system, the company notes.

Lamort, France, reports that it delivered in 1985-86 its Helipoire system for the first time to companies using boxboard container and mixed wastepaper to make fluting, wrapping papers and linerboard. The system normally includes a high-consistency Helico pulper without perforated plate, a dumping Poire with perforated plate, and a high-density cleaner followed by a centrifugal CH screen with holes, working at 4% consistency. Rejects are sent into an auxiliary screen reject Diabolo to remove contaminants.

The company says that although the system absorbs a large amount of energy at the pulper, the absence of a deflaker results in lower average consumer power requirements than with conventional systems.

**REPORTS BY COUNTRY.** Below are a few country-by-country capsule reports of wastepaper usage.

**France.** Wastepaper use increased 1.4% during 1985, reaching a level of 41.3% of the industry's total furnish requirements. Overall consumption, however, was down 0.5% to 2.21 million tons due to lower paper industry operating rates. However, while consumption of the lowest and highest grades both fell, demand for the deinking grades grew by 10% from 1984. Prices continued to decline due to high supply levels in the EEC countries throughout the year.

**Sweden.** Demand for paperstock remained tight in 1985, with consumption reaching a record 833,300 tons or 3% more than in 1984. The highest jump was in newspapers and magazines, which account for almost half of consumption. Despite the glut of wastepaper in Europe, Swedish exports remained high at 143,300 tons compared with 164,250 tons in 1984.

During the first half of the year, the market was about flat from a year earlier. Through the remainder of the year, however, old newspapers/magazines and corrugated declined.

**Japan.** Paperstock markets have remained sluggish since 1985. The dramatic rises in consumption of prior years have leveled off. Prices began to drift downward in April and continued that trend for much of the rest of the year due to slack demand and static supply. Old news prices dropped by about 30% from a year earlier, and other grades suffered similar losses.

**Netherlands.** Prices began dropping in the second half of 1985 and continued to decline in 1986, despite relatively good demand. In the first half of 1986, paperstock usage increased 5%. In 1985, 1.276 million tons were consumed, an increase of 5.8% from the previous year. This led to increased imports as domestic supplies were insufficient to meet demand. This trend is expected to continue.

**Belgium.** An increase in wastepaper consumption in Belgium of 7% to 8% was expected in 1986 and a further rise of 2% to 3% in 1987 due to an increase in industry operating rates. Exports were expected to remain flat in 1986, although imports should drop. Prices remained low during the year, dropping by nearly 50% for the low grades, while the higher grades declined by 10% to 20%. The situation was not expected to change until 1987.

**Finland.** During the first half of 1986, collections rose by about 6%, with corrugated alone up 15%. Wastepaper consumption, however, was 10% lower than a year earlier, with paperstock supplies at about nine weeks at the mill level.

**United Kingdom.** A growth of 3% in wastepaper consumption in 1985 did not continue in 1986. Instead, there was a slight fall starting early in the year and static conditions for much of the year. Supplies were overabundant due to a reduction in exports and a higher collection level throughout Europe.

As a result, prices for the the bulk grades declined 40% to 50%. Pulp substitute prices, however, were kept stable by a strong pulp market until the third quarter. By late in the year, though, processors had stopped accepting recyclable paper from charities. ■